Source Water Assessment Program (SWAP) Report For GENZYME TRANSGENICS CORP.

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

? Inventory land uses within the recharge areas of all public water supply sources;

? Assess the susceptibility of drinking water sources to contamination from these land uses; and

? Publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the Massachusetts Department of Environmental Protection, Bureau of Resource Protection, Drinking Water Program

Date Prepared:
November 26, 2001

Table 1: Public Water System (PWS) Information

PWS NAME	GENZYME TRANSGENICS CORPORATION
PWS Address	87 NEW SPENCER ROAD- GTC FARM
City/Town	CHARLTON, MASSACHUSETTS
PWS ID Number	2054029
Local Contact	THOMAS SMITH
Phone Number	(508) 248-9828

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA (in feet)*	*Source Susceptibility*
Well #1	2054029-01G	139	441	Moderate
Well #2	2054029-02G	100	409	Moderate
Well #3	2054029-03G	100	416	High
Well #4	2054029-04G	129	435	Moderate
Well #5	2054029-05G	100	435	High

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential sources of contamination, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:
This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:
1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

1. Description of the Water System

Genzyme Transgenics Corporation gets its water supply fron five wells. Well #1 is located loicated south of building 1; Well #2 is located inside building 4; Well #3 is located behind building 7 (shop building); Well #4 is located adjacent to to the building where deliveries are made (building 31); and Well #5 is located adjacent to building 5. Wells #1, #2, #3, #4 and #5 each have a Zone I of 139 feet, 100 feet, 100 feet, 129 feet, and 100feet and an Interim Wellhead Protection Area (IWPA) of 441 feet, 409 feet, 416 feet, 435 feet and 418 feet respectively.The IWPA provides an interim protection area for a water

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by **the** water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

supply well when the actual recharge area has not been delineated. The actual recharge area to the well may be significantly larger or smaller than the IWPA. The wells are located in an aquifer with a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration. Please refer to the attached map of the Zone I and IWPA. Water softeners are used to treat the water from Wells 1, 3 and 4. For current information on monitoring results and treatment, please contact the Public Water System contact person listed above in Table 1. Drinking water monitoring reporting data is also available on the web via EPA's Envirofacts website at http://www.epa.gov/enviro/html/sdwis/sdwis_query.html.

2. Discussion of Land Uses in the Protection Areas

There are a number of land uses and activities within the drinking water supply protection areas that are potential sources of contamination.

Key issues include:

1. **Inappropriate Activities in Zone Is;**
2. **Livestock Operations/ Manure Storage;**
3. **Septic systems/Tight tanks/Floor Drains;**
4. **Hazardous material storage and use ; and**
5. **Railroad Tracks**

The overall ranking of susceptibility to contamination for Wells #3 and #5 is High, based on the presence of at least one high threat land use or activity in the IWPA, and for Wells #1, 2, and 4 is Moderate, as seen in Table 2.

1. **Zone Is –** Currently, the wells do not meet DEP's restrictions, which only allow water supply related activities in Zone Is. The facility's Zone Is contain buildings, roads, and parking areas. The public water supplier owns and controls all land encompassed by the Zone I. Please note that systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use or modifying systems.

   Recommendations:

- Remove all non-water supply activities from the Zone I to comply with DEP's Zone I requirements.
- Do not use road salt within the Zone I.

Table 2: Table of Activities within the Water Supply Protection Areas

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Storage, use, and disposal of hazardous materials	No	All Wells	Moderate	
Parking lot & driveways	Wells #1, 2, 3 & 4	Wells #1, 2, 3, & 4	Moderate	Limit road salt usage and provide drainage away from wells
Livestock Operations	Wells #1, 2, & 3	All wells	Moderate	Goat barns
Manure Storage	Well #1, 2, & 3	All wells	Moderate	On impervious floor, removed regularly
Propane Tank	No	Well #4	Low	Aboveground on cement pad & below ground- area clearly marked, gaseous
Septic System	No	Well #3	Moderate	See septic systems brochure in the appendix
Railroad	No	Well #3 & 5	High	

*** -For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.**

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400 foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone II. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

2. **Livestock Operations/Manure Storage –** Each barn has an impervious floor. The manure is trucked off to a separate manure storage area which has an impervious surface. A certified composter trucks it away on a regular basis.

   Recommendation(s):

- Continue to work with the certified trucker to ensure that BMPs for proper manure management already in place is continued.
- If there are questions about manure storage, seek assistance from the Natural Resource Conservation Service (NRCS) in addressing manure management issues.

3. **Septic systems/Holding Tanks/Floor Drains –** All twelve floor drains on-site are hooked-up to tight tanks. The tight tanks and septic systems at the site are pumped twice a year. If a septic system fails or is not properly maintained it could be a potential source of microbial contamination. Improper disposal of household hazardous chemicals to septic systems is a potential source of contamination to the water supply.

   Recommendation(s):

- Staff should be instructed on the proper disposal of spent chemicals; include custodial staff, animal caretakers, groundskeepers, and certified operator.
- Septic system components should be located, inspected, and maintained on a regular basis. Refer to the appendices for more information regarding septic systems.

4. **Storage & Use of hazardous material –** Two 500 gallon tanks, one tank containing gasoline and the other containing diesel, are located within the IWPA of well #4. Also, a locked metal cabinet in the shop building located within the IWPA of well #3 contains several five gallon containers of gas. If managed improperly, leaks or spills of any of these chemicals could be potential sources of contamination of the water supply.

   Recommendation:

- Use Best Management Practices in the storage, handling, and disposal of hazardous chemicals to prevent leaks or spills.

5. **Railroad Track –** An active railroad track runs through the IWPAs of wells #3 and #5. Railroad corridors serving passenger and/or freight trains are potential contaminant sources due to chemicals released during normal use, track maintenance, and accidents. Normal maintenance of railroad rights of way can introduce contaminants to a water supply through herbicide application for vegetation control. Accidents can release spills or engine fluids and commercially transported chemical.

   Recommendations:

- Contact your local Board of Health to ensure that the IWPA is included in right of way pesticide management planning.
- Contact local fire department to ensure that the IWPA is included in Emergency Response Planning Updates to this plan should include the railroad rights-of-way including coordination with the owner/operator of the track and trains using the right-of-way. Request emergency response teams to coordinate Emergency Response Drills and practice containment of potential contaminants from train accidents within the protection area, which should attempt to include representatives from the owner/operator of the trains utilizing the right-of-way.

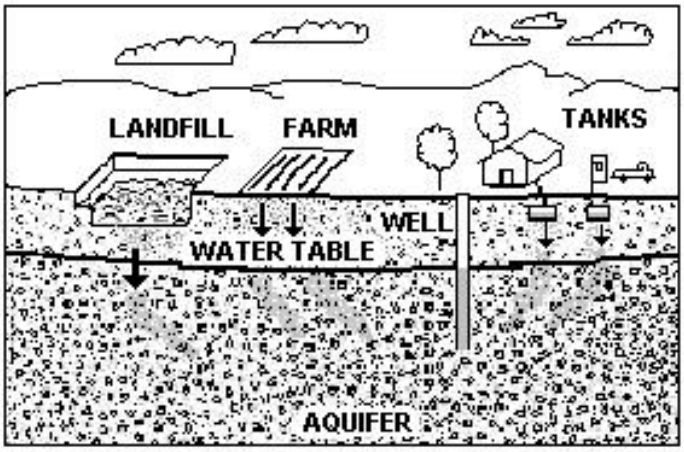

Figure 1: Example of how a well could become contaminated by different land uses and activities.

Implementing the following recommendations will reduce the system's susceptibility to contamination.

For More Information:

Contact Josephine Yemoh-Ndi in DEP's Worcester Office at (508) 792-7650 x 4030 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at: www.state.ma.us/dep/brp/dws/

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws, including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been provided to the public water supplier, town boards, and the local media.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the wells' susceptibility to contamination. Genzyme Transgenics Corporation should review and adopt the key recommendations above and the following:

Priority Recommendations specifically for well #4:

- Regarding well #4, remove the containers from Zone 1;
- Post the Zone 1 with "Public Drinking Water Recharge Area" or similar signs; and
- Install physical barriers to protect the wellhead.

Zone I:

- Consider well relocation if Zone I threats cannot be mitigated.
- If Genzyme Transgenics Corporation intends to continue utilizing the structures in the Zone I, use BMPs and restrict activities that could pose a threat to the water supply.
- Do not use road salt within the Zone I.

Training and Education:

- Train staff on proper hazardous material use, disposal, emergency response, and best management practices; include custodial staff, groundskeepers, and certified operator. Post labels as appropriate on raw materials and hazardous waste.
- Post drinking water protection area signs at key visibility locations

Facilities Management:

- Implement standard operating procedures regarding proper storage, use and disposal of hazardous materials. To learn more, see the hazardous materials guidance manual at www.state.ma.us/dep/bwp/dhm/dhmpubs.html.
- The facility is currently not registered as a generator of hazardous waste or waste oil. Review enclosed document "A Summary of Requirements for Small Quantity Generators of Hazardous Waste" to determine your status and regulatory requirements.

Planning:

- Work with local officials in Charlton and Spencer to include the Genzyme Transgenics Corporation IWPA in Aquifer Protection District Bylaws and to assist you in improving protection.
- Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.
- Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a land use inventory to assist in setting priorities, focusing inspections, and creating educational activities.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Area.
- Recommended Source Protection Measures Factsheet
- Your Septic System Brochure
- Pesticide Use Factsheet
- Source Protection Sign Order Form